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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
	10/840,161	OVERSTREET ET AL.
	Examiner	Art Unit
	J. Bret Dennison	2143

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>06 May 2004</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-34</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-27 and 30</u> is/are rejected.

7)☐ Claim(s) <u>28,29 and 31-34</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date <u>8/30/2004</u>.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

1.   This Action is in response to Application Number 10/840,161 received on 12 May 2005.

2.   Claims 1-35 are presented for examination.

Claim Interpretation

3.   Before a detailed rejection, a discussion should be made about partitioning to clarify Examiner's interpretation of the claimed invention with relation to Applicant's Specification. Partitioning is a process that is well known in the Networking art to occur in a cluster of nodes when one of the nodes in the cluster fails. When failed node detected, the cluster is reformed, a new leader is usually elected, and the rest of the nodes are reconfigured in order to pick up the workload of the failed node (i.e. the cluster is partitioned into one subnet of the remaining nodes and another subnet of the failed node(s)). Therefore, when a node that is either not functioning properly or has left the cluster, a partition of that cluster occurs.

4.   An example of this is disclosed in Gunduc et al. (U.S. 2004/0153558), paragraph [0064], which shows the removal of a cluster member from the cluster, resulting in the partitioning of the cluster.

5.   Another example of this is disclosed in Wipfel et al. (U.S. 2005/0268154) in which a partition occurs when one or more nodes in the cluster fails, and the surviving nodes are determined and the cluster is reformed (see paragraph [0012] for example, "cluster partitioning").

6.   Examiner would like to discuss the limitations of claim 1 to clarify Examiner's

interpretation of the claim.

In short, claim 1 recites, a partition occurs, a new subnet controller is selected,

and then a successor subnet controller is selected.

In reference to <u>pages 11-13 of Applicant's Specification</u>, it appears that Applicant

is broadly claiming the following:

a.   A subnet controller fails, and then an election occurs (partition into at least

one subnet).

b.   A first node claims leadership and provides a bully number (selection of a

subnet controller).

c.   Then a second node determines that its bully number is higher and it

claims the leadership over the first node (selection of a successor controller).

Claim Objections

7.   Claims 19 and 35 are objected to because of the following informalities:

8.   Claim 19 includes the limitation, "determining a date of a particular virus definition

file on each of the plurality of clients and whether the file is <u>greater</u> than a

predetermined number of days", which appears to include a minor typo. Examiner

suggests the limitation to read, "and whether the file is <u>older</u> than a predetermined

number of days."

9.   Claim 35 recites the limitation, "within each of the plurality of subnets." Examiner

suggests amending this limitation to, "within each of the at least one subnet" to remain

consistent with the claim as well as to remove any antecedent basis issues.

10.   Claim 20 recites the limitation, "wherein the global controller dictates an interval

of time during which the subnet controller checks the health of the plurality of clients,

data indicating the interval of the time included within the data received from the global

controller", which appears to include a minor typographical error. Examiner suggests

changing the underlined portion by possibly amending the limitation to read "and

provides data indicating the interval of the time".

Appropriate correction is required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
> matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
> conditions and requirements of this title.

11.   Claim 35 is rejected under 35 U.S.C. 101 because the claimed invention is

directed to non-statutory subject matter.

Claim 35 includes a system for managing a network including a plurality of clients

in at least one subnet and a global controller.

Applicant's Specification states the following:

"The components of Fig. 1 may be implemented through hardware, **software,**

and/or firmware." [See Applicant's Specification, page 9, lines 1-3]

Figure 1 shows a system includes a plurality of clients within at least one subnet and a global controller as claimed in claim 35.

Therefore Applicant's Specification provides intrinsic evidence that the system of claim 35 may be implemented in strictly software (i.e. a software system).

Computer programs claimed as computer listings per se, i.e., the descriptions or expressions of the programs are not physical "things". They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer, which permit the computer program's functionality to be realized.

M.P.E.P. 2601.1 Section I states, "Since a computer program is merely a set of instructions capable of being executed by a computer, the computer program itself is not a process and USPTO personnel should treat a claim for a computer program, without the computer-readable medium needed to realize the computer program's functionality, as nonstatutory functional descriptive material."

Claim 35 does not provide the computer-readable medium needed to realize the program's functionality. As such, claim 35 is not limited to statutory subject matter and are therefore non-statutory.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

12.   Claims 1-9, 13, 15, 17-18, 21-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Basani et al. (U.S. 6,993,587).

13.   Basani disclosed a method and apparatus for election of group leaders in a distributed network in which the members of a cluster of servers elect a group leader whenever a new group leader is required, as when the prior group leader becomes unavailable, as detected by the absence of a periodic heartbeat message published by the leader. The election is carried out by a system of voting by each candidate whereby each candidate has a priority calculated from its configuration, and the server with the highest priority is configured to claim the leadership (LC, i.e. "leader claim"). Each candidate multicasts its priority. Each candidate that receives a multicast claim for leadership from another candidate compares its own priority against the claimant and only votes for itself if its own priority is higher. After a preconfigured period of hearing no other claimants with higher priority, the candidate with the highest priority becomes the new leader (**See Abstract**). Therefore, Basani disclosed that a selected prior group leader is replaced by a new group leader upon indication that the prior group leader becomes unavailable. As also shown above, the group leader is responsible for issuing heartbeat messages to the other servers of the cluster, the heartbeat messages used for determining the status of the nodes, i.e. making sure they are properly functioning.

14.   Regarding claim 1, Basani disclosed a method for managing a network, the

network comprising:

partitioning the network into at least one subnet, the at least one subnet including

a plurality of clients (Basani, col. 14, lines 26-28, Basani disclosed, "If any server fails to

observe the LA messages for a configurable period, then such a server initiates a new

election"; col. 14, lines 10-15, An "LA message" means "Leader Alive". If the leader is

not alive, LA messages are not obtained from the leader and the cluster has to be

reconfigured, starting with the leader; See above description for further explanation)

selecting one of the plurality of clients to be operable as a subnet controller

(Basani, col. 14, lines 28-30, Basani disclosed that the first server to correctly notice the

leader is dead claims the leadership by issuing an LA message);

selecting another of the plurality of clients to be operable as a successor subnet

controller (Basani, col. 14, lines 30-40; Basani disclosed that if another candidate has a

higher priority, it sends a "Leader Claim" message; col. 14, lines 44-45, Basani

disclosed that voting is done by sending an LC message with a priority; As specified in

the Abstract, if the candidate has a higher priority, it claims the leadership over the

current leader);

the subnet controller and the successor subnet controller being operable for

determining health of the plurality of clients within the at least one subnet (Basani, col.

5, lines 35-45, Basani disclosed that the group leader is responsible for overseeing the

distribution of the assignment to the remote or Backend Servers, and the Backend

Servers report either success or failure back to the Group Leader, and the Group

Leader reports the status to the Content Control Manager; see also Abstract, the Group

Leader is responsible for issuing periodic heartbeat messages; Heartbeat messages

are well known to be used for determining the status of devices).

15.   Regarding claim 2, Basani disclosed the limitations as described in claim 1,

including wherein selecting the one of the plurality of clients to be operable as the

subnet controller includes

     monitoring communications between each of the plurality of clients for

determining whether one of the plurality of clients is operating as the subnet controller

(Basani, col. 14, lines 26-28, Each server monitors for a "Leader Alive" message, which

indicates that there is a leader), and

     performing a local election amongst the plurality of clients within the at least one

subnet if it is determined that one of the plurality of clients is not operating as the subnet

controller (Basani, col. 14, lines 26-28, If no "Leader Alive" message is received, the

server initiates an election).

16.   Regarding claim 3, Basani disclosed the limitations, as described in claim 2,

including wherein monitoring communications includes monitoring communications for a

first predetermined period of time for determining whether one of the plurality of clients

is operating as the subnet controller (Basani, col. 14, lines 26-27, Basani disclosed each

server monitoring for an LA message for a <u>configurable period</u>), and repeating the

monitoring after expiration of a second predetermined period of time (Basani, col. 14, lines 28-40, After the configured period and no LA message, an election occurs, a server claims leadership, and If no other server attempts to claim leadership for a "preset time", that server becomes the leader. After this occurs, all the servers of the cluster again start monitoring for a "Leader Alive" message.).

17. Regarding claim 4, Basani disclosed the limitations as described in claim 3, including wherein monitoring communications for the first predetermined period of time includes determining whether communication is originating from one of the plurality of clients indicative of the one of the plurality of clients operating as the subnet controller (Basani, col. 14, lines 10-15, The group leader notifies each member in the group with a periodic "Leader Alive" message, col. 14, lines 26-28, The servers of the cluster monitor for the "Leader Alive" message, the LA message indicating that the communication is from the current Group Leader).

18. Regarding claim 5, Basani disclosed the limitations, as described in claim 4, including wherein determining whether communication is originating from the one of the plurality of clients includes

determining whether another of the plurality of clients receives a request for status from the one of the plurality of clients (Basani, col. 5, lines 37-45, Basani disclosed the Group Leader issuing a status request to a backend server and the backend server reports the status back to the Group Leader; See Also Abstract, the

Group Leader is responsible for sending out periodic heartbeat messages. Heartbeat messages are well known in the art to be status request messages).

19.   Regarding claim 6, Basani disclosed the limitations, as described in claim 1, including wherein the other of the plurality of clients is selected as the successor subnet controller when the subnet controller is improperly operating (Basani, see Abstract, and col. 14, lines 26-28, Basani also disclosed that a successor group leader is selected when the prior Group Leader becomes unavailable, as detected by absence of a periodic heartbeat message published by the leader or if the prior Group Leader fails to provide a "Leader Alive" message for a configurable period, meaning the Group Leader is not properly functioning).

20.   Regarding claim 7, Basani disclosed the limitations as described in claim 1, including wherein selecting another of the plurality of clients to be operable as the successor subnet controller includes

generating by the subnet controller a number (Basani, see Abstract, Basani disclosed each candidate calculates a priority to claim the leadership; col. 14, lines 28-30, The first server to notice the failure of the prior group leader issues a leadership claim "LC message"; col. 14, lines 44-45, Voting is done by sending this LC message with a priority claim; Therefore, the first server calculates a priority, claims the leadership and becomes the group leader),

transmitting by the subnet controller the number to each of the other plurality of clients (Basani, col. 14, lines 28-30, The first server to notice the failure of the prior group leader issues a leadership claim "LC message"; col. 14, lines 44-45, Voting is done by sending this LC message with a priority claim; Therefore the first server sends its priority with the LC message),

generating by the each of the other plurality of clients a respective number (Basani, see Abstract, Each candidate calculates a priority to claim the leadership),

comparing by the each of the other plurality of clients the respective number with the number associated with the subnet controller to determine if the respective number is greater than the number (Basani, see Abstract, Each candidate compares its own priority against the claimant),

transmitting by at least one of the other plurality of clients its respective number to the other of the plurality of clients if it is determined that its respective number is greater than the number (Basani, see Abstract, Each candidate compares its own priority against the claimant and only votes for itself if its own priority is higher), and

repeating until one of the plurality of clients determines that its respective number is greater than the respective number of each of the other plurality of clients (Basani, see Abstract, After a preconfigured period of hearing no other claimants with higher priority, the candidate with the highest priority becomes the new leader).

21.   Regarding claim 8, Basani disclosed the limitations, as described in claim 7, including wherein generating the number includes using a software application stored in

a memory unit associated with the subnet controller to evaluate at least one of the following criteria associated with the subnet controller: processor speed, whether a user is logged into the subnet controller, a number of users connected to the subnet controller, a memory size, a network connection speed, central processing utilization and a number of processors (Basani, see Abstract, Basani disclosed that calculating the priority is based on the server's configuration).

As defined in Microsoft Computer Dictionary, "configuration" means, "In reference to a single microcomputer, the sum of a system's internal and external components, including memory, disk drives, keyboard, video, and generally less critical add-on hardware."

22. Regarding claim 9, Basani disclosed the limitations, as described in claim 7, including wherein generating the respective number for each of the other plurality of clients includes using a software application stored in a memory unit to evaluate at least one of the following criteria: processor speed, whether a user is logged in, a number of connected users, a memory size, a network connection speed, central processing utilization and a number of processors (Basani, see Abstract, Basani disclosed that calculating the priority for each candidate is based on the server's configuration). See definition of "configuration" in the above rejection to claim 8.

23. Regarding claim 13, disclosed the limitations, as described in claim 1, including wherein determining the health of the plurality of clients includes implementing at least

one health rule by the subnet controller and the successor subnet controller, the at least

one health rule being stored locally at the subnet controller and the successor subnet

controller (Basani, col. 5, lines 35-40, Basani disclosed the CCM forwarding assignment

data to the dynamically configured cluster Group Leader; col. 6, lines 15-25, A dynamic

tree structure is maintained by the system based on real-time nominations of the Group

Leaders and their respective registrations of group members within each cluster,

reported to and processed by the CCM. The elected Group Leader is then provided

with the assignment from the CCM; Therefore, every Group Leader, and their

Successor group leaders implement the assignment; col. 5, lines 37-40, and every

Group Leader is responsible for overseeing the distribution of the assignment, which

requires storing the assignment and overseeing that the members of the cluster perform

their assignment pieces).

24.   Applicant's Specification defines a "health rule" as a pre-defined rule for

managing a network and its plurality of subnets [See Applicant's Specification, page 6,

lines 13-17]. Therefore, a health rule can simply be a command having anything to do

with managing a network, such as the "assignment commands" as disclosed by Basani.

25.   Regarding claim 15, Basani disclosed a method for managing a subnet having a

plurality of clients, the method comprising:

operating as a subnet controller, the subnet controller being one of the plurality of

clients (Basani, Fig. 1, 30a "Elected Group Leader" operates as the controller for subnet

24a);

reporting to a global controller (Fig. 1, 30a reports to CCM at the Distribution Server

16; col. 5, lines 35-37, the Content Control Manager provides assignment commands

and data to the group Leader);

receiving data from the global controller (Basani, col. 5, lines 35-37, the Content

Control Manager provides assignment commands and data to the group Leader);

transmitting data to the plurality of clients within the subnet (Basani, col. 5, lines 37-

40, the Group Leader distributes the assignment to the backend servers);

receiving feedback data from at least one client of the plurality of clients (Basani,

col. 5, lines 41-43, The Backend servers respond to the Group Leader with status

reports);

evaluating the feedback data for determining health of the at least one client

(Basani, col. 5, lines 43-45, The Group Leader report the status of the assignment for all

of their corresponding backend servers, requiring evaluating the feedback from each

server; col. 6, lines 39-42, Basani disclosed that the Group Leader obtains the individual

status reports from each group member and sends a group distribution report back to

the CCM; The group distribution report requires evaluation of the individual reports in

order to create the group report; col. 11, lines 49-51 "consolidated report");

and reporting to the global controller data regarding the health of the at least one

client (Basani, col. 5, lines 44-45, Basani disclosed that the Group Leader reports this

status information back to the CCM).

26.   Regarding claim 17, Basani disclosed the limitations, as described in claim 15, including wherein the global controller is located outside the subnet (Basani, Fig. 1, CCM located at Distribution server 16 is outside of subnets 24a and 24b) and reporting to the global controller includes reporting to the global controller after expiration of a predetermined amount of time (Basani, col. 19, line 65 through col. 20, line 2; Basani disclosed reporting to the CCM when a backend server went offline; In order to determine that a backend server went offline the Group Leader must send a periodic heartbeat message, as disclosed in the Abstract, which requires the backend server to respond within a predetermined period of time. If it does not, the Group Leader determines that the server has failed and reports this to the CCM).

27.   Regarding claim 18, Basani disclosed the limitations, as described in claim 15, including wherein receiving data from the global controller includes receiving at least one health rule for the subnet controller to manage the subnet (Basani, col. 9, lines 15-25, Basani disclosed system administrators define what policies and rules need to be applied, col. 5, lines 35-40, Basani disclosed the CCM assigning assignment commands and content data). Applicant's Specification defines a health rule as a predefined rule for managing the network (See Applicant's Specification, page 6, lines 13-17). Assigning commands and content data to the clusters includes managing the network.

28.   Regarding claim 21, Basani disclosed the limitations, as described in claim 15, including wherein each of the plurality of clients has a rule parser (Basani, col. 6, lines

37-39, Basani disclosed each backend server having a Content Interpreter that parses

the assignment), and transmitting data to the plurality of clients within the subnet

includes transmitting at least one health rule for each of the plurality of clients to

determine compliance with the at least one health rule using the respective rule parser,

the at least one health rule being at least one question (Basani, col. 5, lines 41-45,

Basani disclosed that the Content Interpreter receives and processes the assignment

reporting either success or failure back to the group leader; col. 12, lines 45-50, Basani

disclosed that the assignment is parsed to determine what actions to take in furtherance

of the job at hand).

29.   Regarding claim 22, Basani disclosed the limitations, as described in claim 22,

including wherein the subnet controller stores address data identifying each of the

plurality of clients within the subnet for determining a quantity of and identity of clients

that should respond to the at least one question (Basani, col. 15, lines 17-20, the

elected group leader receives registration information from each server in the cluster,

the registration data including the server's IP address; col. 18, line 64 through col. 19,

line 20, The group leader determines which registered members respond and which

needs to respond to the assignment).

30.   Regarding claim 23, Basani disclosed the limitations, as described in claim 22,

including wherein receiving feedback data includes receiving at least one response to

the at least one respective question (Basani, col. 5, lines 42-44, Basani disclosed the

backend server reporting back a success or failure response).

31.   Regarding claim 24, Basani disclosed the limitations, as described in claim 23,

including wherein the at least one response is one of true or false, yes or no, and pass

or fail (Basani, col. 5, lines 42-44, Basani disclosed the backend server reporting back a

success or failure response).

32.   Regarding claim 25, Basani disclosed the limitations, as described in claim 23,

including wherein evaluating the feedback data for determining the health of the at least

one client includes determining whether the at least one client is active in the subnet

(Basani, col. 19, lines 1-10, Basani disclosed the group leader determining which

members did not report back to the group leader) and whether the at least one

response indicates compliance with the at least one corresponding health rule (Basani,

col. 5, lines 42-44, Basani disclosed the backend server reporting back a success or

failure response to the assignment data).

33.   Regarding claim 26, Basani disclosed the limitations, as described in claim 25,

including wherein if the at least one client is determined to be active in the subnet and

the at least one response indicates compliance with the at least one corresponding

health rule, then a determination is made that the at least one client is healthy (Basani,

col. 5, lines 42-44, Basani disclosed the backend server reporting back a success or

failure response; If the backend server reports back a success, this indicates to the

group leader that the backend server is functioning properly, i.e. healthy; See Also

Abstract, Basani disclosed the Group Leader sending Heartbeat messages which also

indicate the status/health of the servers).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

34.   Claims 10-12, 16, 30 and 35 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Basani et al. (U.S. 6,993,587) in view of Kampe et al. (U.S.

7,039,694).

35.   Regarding claim 10, Basani disclosed the limitations, as described in claim 1,

including, calculating a priority for each member of the cluster, the priority calculated

based on the server's configuration (Basani, see Abstract) and selecting the client to be

operable as the successor subnet controller, if at least one client is available (Basani,

col. 14, lines 26-31).

As defined in Microsoft Computer Dictionary, "configuration" means, "In reference

to a single microcomputer, the sum of a system's internal and external components,

including memory, disk drives, keyboard, video, and generally less critical add-on hardware."

Basani did not explicitly state wherein the subnet controller <u>maintains a list</u> of the priorities of the members of the cluster identifying the members that have a number greater than a number associated with the subnet controller.

In an analogous art of cluster reformation, Kampe disclosed a cluster membership monitor in which the master node maintains the node configuration in a repository (Kampe, col. 3, lines 27-33), in which for each node, a node priority is maintained (Kampe, col. 3, line 40).

Basani disclosed a global management system that communicates with a node within a cluster that operates as the manager of the cluster.

Kampe disclosed a monitoring system in which a manager node within a cluster obtains the cluster configuration information for each node of the cluster.

One of ordinary skill would have been motivated to modify the manager node of Basani to include maintaining the cluster configuration as taught in Kampe since both teachings are within the same environment, and doing so would not require any extra implementation.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate maintaining the node configuration of the cluster as provided in Kampe into the Group Leader node of Basani to obtain the predictable result of allowing the Group Leader node to determine whether a node within the cluster is able to act as a cluster master (Kampe, col. 3, lines 51-53) as well

as determine which node has priority over the other nodes thereby allowing the master

node to select the most appropriate node to run the cluster.

36.   Regarding claim 11, Basani and Kampe disclosed the limitations as described in

claim 10, including wherein determining the client identified in the list having the

greatest number that is available for operating as the successor subnet controller

includes determining whether the client identified in the list responded to data

transmitted to the client from the subnet controller (Kampe, col. 3, lines 35-45, Kampe

disclosed monitoring the heartbeat timer for each node as well as a number of missed

heartbeats before initiating the cluster consensus procedure, used for determining the

next master node). See motivation above.

37.   Regarding claim 12, Basani and Kampe disclosed the limitations as described in

claim 10, including performing a local election within the at least one subnet if at least

one client in the list is not available for operating as the successor subnet controller to

determine the successor subnet controller (Kampe, col. 2, lines 50-58, Kampe disclosed

upon cluster reformation, i.e. a change in cluster membership occurs requiring cluster

reformation, the monitor elects a new master to succeed the old one). See motivation

above.

38. Regarding claim 16, disclosed the limitations, as described in claim 15. Basani also disclosed transmitting unicasts to any participating group member who did not report or whose response was lost.

Basani did not explicitly state determining a client of the plurality of clients to check the health of the clients within the subnet that did not provide the feedback data to the subnet controller and receiving data from the client regarding the health of the clients that did not provide the feedback data.

In an analogous art, Kampe disclosed a cluster membership monitor, in which, upon one of the nodes taking on the "master role", it monitors the nodes of the cluster for viability. "In order to reduce the load of monitoring traffic, it may make use of agents to perform fan-out/fan-in of the heartbeat" (Kampe, col. 4, line 65 through col. 5, line 5). Therefore, Kampe disclosed that the master node delegates the monitoring of heartbeat messages to agents within the cluster. It would have been obvious to one of ordinary skill that these agents must be on other nodes of the cluster in order for the master to successfully "reduce the load of monitoring traffic" on itself. As Kampe also disclosed, the cluster membership monitor provides a distribution service through the collaboration of individual monitor entities, each running on a peer node in the cluster (Kampe, col. 2, lines 46-50). Kampe shows that it is the master node that keeps track of the configuration repository which includes a database recording heartbeat information (Kampe, col. 3, lines 26-45). Therefore it would have been obvious to one of ordinary skill in the art that the agents must collaborate and provide such heartbeat information

to the master node in order for the master node to remain up to date with the configuration of the cluster.

Basani disclosed a global management system that communicates with a node within a cluster that operates as the manager of the cluster, and the manger of the cluster communicates with the other nodes in the cluster.

Kampe disclosed a monitoring system in which a manager node within a cluster can either monitor the status or delegate certain aspects of monitoring to other nodes within the cluster (Kampe, col. 4, line 65 through col. 5, line 5).

One of ordinary skill would have been motivated to modify the manager node of Basani to include the delegation features of Kampe since both teachings are within the same environment, and doing so would not require any extra implementation.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the agents option of Kampe into the Group Leader node of Basani to obtain the predictable result of allowing the Group Leader node to delegate monitoring tasks to other nodes of the cluster, thereby "reducing the load of monitoring traffic on the Group Leader (Kampe, col. 5, lines 1-2).

39.   Regarding claim 30, Basani disclosed the limitations, as described in claim 15.

Basani did not explicitly state determining a plurality of clients to check the health of the clients within the subnet that did not provide the feedback data to the subnet controller; and receiving data from the plurality of clients regarding the health of the clients that did not provide the feedback data.

In an analogous art, Kampe disclosed a cluster membership monitor, in which, upon one of the nodes taking on the "master role", it monitors the nodes of the cluster for viability. "In order to reduce the load of monitoring traffic, it may make use of agents to perform fan-out/fan-in of the heartbeat" (Kampe, col. 4, line 65 through col. 5, line 5). Therefore, Kampe disclosed that the master node delegates the monitoring of heartbeat messages to agents within the cluster. It would have been obvious to one of ordinary skill that these agents must be on other nodes of the cluster in order for the master to successfully "reduce the load of monitoring traffic" on itself. As Kampe also disclosed, the cluster membership monitor provides a distribution service through the collaboration of individual monitor entities, each running on a peer node in the cluster (Kampe, col. 2, lines 46-50). Kampe shows that it is the master node that keeps track of the configuration repository which includes a database recording heartbeat information (Kampe, col. 3, lines 26-45). Therefore it would have been obvious to one of ordinary skill in the art that the agents must collaborate and provide such heartbeat information to the master node in order for the master node to remain up to date with the configuration of the cluster.

Basani disclosed a global management system that communicates with a node within a cluster that operates as the manager of the cluster, and the manger of the cluster communicates with the other nodes in the cluster.

Kampe disclosed a monitoring system in which a manager node within a cluster can either monitor the status or delegate certain aspects of monitoring to other nodes within the cluster (Kampe, col. 4, line 65 through col. 5, line 5).

One of ordinary skill would have been motivated to modify the manager node of

Basani to include the delegation features of Kampe since both teachings are within the

same environment, and doing so would not require any extra implementation.

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to incorporate the agents option of Kampe into the Group

Leader node of Basani to obtain the predictable result of allowing the Group Leader

node to delegate monitoring tasks to other nodes of the cluster, thereby "reducing the

load of monitoring traffic on the Group Leader (Kampe, col. 5, lines 1-2).

40.   Regarding claim 35, Basani disclosed a system for managing a network including

at least one subnet, the system comprising:

a plurality of clients located within the at least one subnet (Basani, Fig. 1,

Devices 26 in subnet 24a),

one client of the plurality of clients operable as a subnet controller for managing

the at least one subnet (Basani, Fig. 1, "Elected Group Leader" 30a),

each of the plurality of clients having an election algorithm for selecting the one

client within each of the plurality of subnets operable as the subnet controller (Basani,

see Abstract, "The members of a group of servers in a multicast network elect a group

leader whenever a new group leader is required"); and

a global controller coupled to the at least one subnet (Basani, Fig. 1, Distribution

Server 16 which is coupled to subnet 24a; col. 5, lines 13-15, The distribution server

runs a Content Control Manager, CCM),

the global controller transmitting at least one health rule to the one client within

each of the plurality of subnets operable as the subnet controller (Basani, col. 5, lines

29-40, Basani disclosed that CCM forwards assignment commands and content data to

the Group Leader). Basani further disclosed that the Group Leader is responsible for

overseeing the distribution of the assignment to the backend servers (Basani, col. 5,

lines 38-40). Basani disclosed that the Group Leader passes the assignment data to a

distributing agent (Fig. 1, 32a) on each of the backend servers, to perform the

requested job (Basani, col. 12, lines 45-50).

Basani did not explicitly state wherein the subnet controller delegates to at least

one of the other clients within the at least one subnet monitoring of the plurality of

clients within the at least one subnet according to the at least one health rule.

In an analogous art, Kampe disclosed a cluster membership monitor, in which,

upon one of the nodes taking on the "master role", it monitors the nodes of the cluster

for viability. "In order to reduce the load of monitoring traffic it may make use of agents

to perform fan-out/fan-in of the heartbeat" (Kampe, col. 4, line 65 through col. 5, line 5).

Therefore, Kampe disclosed that the master node delegates the monitoring of heartbeat

messages to agents within the cluster. It would have been obvious to one of ordinary

skill that these agents must be on other nodes of the cluster in order for the master to

successfully "reduce the load of monitoring traffic" on itself.

Basani disclosed a global management system that communicates with a node

within a cluster that operates as the manager of the cluster, and the manger of the

cluster communicates with the other nodes in the cluster.

Kampe disclosed a monitoring system in which a manager node within a cluster can either monitor the status or delegate certain aspects of monitoring to other nodes within the cluster.

One of ordinary skill would have been motivated to modify the manager node of Basani to include the delegation features of Kampe since both teachings are within the same environment, and doing so would not require any extra implementation.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the agents option of Kampe into the Group Leader node of Basani to obtain the predictable result of allowing the Group Leader node to delegate monitoring tasks to other nodes of the cluster, thereby "reducing the load of monitoring traffic on the Group Leader (Kampe, col. 5, lines 1-2).

41.   Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Basani et al. (U.S. 6,993,587) in view of Vainio et al. (U.S. 2004/0243702).

42.   Regarding claim 27, Basani disclosed the limitations, as described in claim 25.

Basani did not explicitly state wherein if the at least one client is determined to be active in the subnet and the at least one client did not transmit a response to the at least one question, then a determination is made that the at least one client is un-managed.

In an analogous art of networking, Vainio disclosed a mechanism for data collection in a computer cluster including heartbeat monitoring, collected for an entity external to the cluster, such as a network monitoring or management system (Vainio,

[0029]), in which computers within the cluster provide two types of heartbeat messages, normal heartbeat messages and heartbeat acknowledgment messages containing state information (Vainio, [0035]) the state information describing predetermined conditions as well as specific types of state information (Vainio, [0035]-[0036]). Vainio disclosed a manager node transmitting a heartbeat message that requests such state information, and if "the predetermined condition is not fulfilled, the computer node generates a normal heartbeat acknowledgement message, i.e. a heartbeat acknowledgement message without state information. The generates message is then sent back to the manager node" (Vainio, [0034]). Therefore Vainio disclosed a system that allows the nodes to report back to the manager node a normal heartbeat message, indicating that the node is active, but also without the state information if it is not fulfilled, overall indicating that the node is un-managed.

43.   Claims 14 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Basani et al. (U.S. 6,993,587) in view of Gryaznov (U.S. 2003/0070087).

44.   Regarding claims 14 and 19, Basani disclosed the limitations, as described in claims 13 and 18, including the global control manager (CCM) interacting with the distribution server to establish content management service configurations and content distribution policies (Basani, col. 5, lines 15-20) in order to schedule transactions such as updates, events, and backups (Basani, col. 5, lines 19-23). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made that

the CCM would have to keep track of the configurations of the backend servers in order

to properly distribute content and schedule updates and synchronization. In other

words, the CCM would have to determine what version of software is currently running

on each device in order to efficiently and successfully update such software. Therefore,

Basani disclosed a manager that schedules updates and synchronization. However,

Basani does not provide detail as to the types of updates the manager performs. This

would have motivated one of ordinary skill to search the prior art for types of updates

that are performed between devices.

In an analogous art, Gryaznov provides an update scheduler that schedules

when updates for anti-virus programs are to occur and a configuration manager that

provides the capability to examine configurations to determine what needs to be

updated, for example by comparing version numbers, creation or modification dates,

etc. (Gryaznov, [0029]).

While Basani disclosed a general type of scheduling updates, Gryaznov provides

a more specific type of manager that schedules updates for anti-virus software.

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to use the manager of Basani to schedule updates for anti-

virus software to obtain the predictable result of maintaining a system that can detect

the latest viruses or other malicious programs in order to take corrective action by

isolating the file or data, deleting the file or data, etc. (Gryaznov, [0003]).

45.   Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Basani

et al. (U.S. 6,993,587) in view of Srivastava et al. (U.S. 7,287,075).

46.   Regarding claim 20, Basani disclosed the limitations, as described in claim 15.

        Basani did not explicitly state wherein the global controller dictates an interval of

time during which the subnet controller checks the health of the plurality of clients, and

provides data indicating the interval of the time.

        In an analogous art, Srivastava disclosed a system for managing/monitoring a

cluster of servers in which a Node Manager monitors the status of multiple servers .

(Srivastava, col. 2, lines 40-41). Srivastava disclosed that the Node Manager may be

controlled by an external administrative agent (Srivastava , col. 2, line 66 through col. 3,

line 2) in which the Node Manager may allow its functionality and access to server

health information to become available to external administrative clients (Srivastava,

col. 8, lines 27-30). Srivastava also disclosed the Node Manager following certain

parameters that will control how the Node Manager periodically checks the servers

including "HealthCheckIntervalSeconds" which specifies an interval of time between

which periodic scans are performed (Srivastava, col. 7, lines 60-63).

        Since Srivastava disclosed that an external administrative agent can control the

health features of the Node Manager, it would have been obvious to one of ordinary skill

that the external agent can transmit data to the Node Manager to update the

parameters, such as the "HealthCheckIntervalSeconds" in order to control the health

functions of the Node Manager.

Basani disclosed a global management system that communicates with a node within a cluster that operates as the manager of the cluster, and the manger of the cluster communicates with the other nodes in the cluster. Basani also disclosed that the global server (CCM) is able to provide configurable policies such as scheduled updates and events (Basani, col. 5, lines 12-20).

Srivastava disclosed an external administrative agent able to control the Node Manager of a cluster of server.

Therefore, both Basani and Srivastava disclosed a manager of a cluster in communication with an external manager.

One of ordinary skill would have been motivated to modify the system of Basani to allow the global manager node of Basani to include the health control features of Srivastava since both teachings are within the same cluster management environment, and doing so would not require any extra implementation.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the global manager of Basani to be able to control the health functions and parameters of the cluster manager node in order to provide the Control Manager with a way to interact with the distribution server in a more controlled manners to establish content management service configurations and content distribution policies (Basani, col. 5, lines 15-20).

Allowable Subject Matter

Claims 28-29 and 31-34 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art disclosed, in a broad sense, a master of a cluster delegating the fan-in/fan-out of heartbeat messages to other nodes (agents on other nodes) within the cluster (see Kampe, U.S. 7,039,694, col. 5, lines 1-5).

However, the prior art did not disclose, the specific detail of the master node first performing the monitoring of the health of the cluster by asking a question, and sending an extra message to the clients who responded to the question with feedback, and delegating the task of checking the health of the clients who did not initially respond, to the client that responded first to the extra message (with respect to claim 28) as well as in the case of having multiple clients check the health of the clients who did not respond, by delegating tasks in batches to the plurality of clients in the order that each client responds to the extra question, the tasks being to check on the health of a client that did not respond to the original question (with respect to claim 31).

Claims 29 and 33 depend from claim 28 and therefore would be allowable for the same reasons. Claims 32 and 34 depend from claim 31 and therefore would be allowable for the same reasons.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Treppa et al. (U.S. 2004/0267910) disclosed a single point management system for devices in a cluster (See Figure 7, which shows a management computer 710 remote from cluster 730).

Wipfel et al. (U.S. 2005/0268154) disclosed a method for detecting and resolving a partition condition in a cluster.

Examiner's Note: Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

In the case of amending the claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to J. Bret Dennison whose telephone number is (571) 272-3910. The examiner can normally be reached on M-F 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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